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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,858	03/08/2004	Robert F. Mataya	55598.111007	1252

27526 7590 04/18/2006

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EXAMINER	
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ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/795,858	MATAYA, ROBERT F.	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-24,26,28-40,42 and 44-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-24,26,28-40,42 and 44-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 29, 2006 has been entered.

Response to Amendment

2. Applicant's amendment filed March 29, 2006 has been entered. Claims 1, 4-24, 26, 28-40, 42, 44-55 are pending in the instant application.

Claim Objections

3. Claim 43 is objected to because it is dependent from canceled claim 41. It is noted that for the purpose of examination it has been assumed to depend from claim 42. Appropriate correction is required.

4. Claim 45 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1, 4-12, 23, 42 and 45-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 1, line 15; claim 23, line 5 and; claim 42, line 16, the limitation of "one or more vacuum output ports" is not enabling because if only a single vacuum output port is present then the claimed mold component is not capable of providing "a *first vacuum* across said interfacing surface and an *independent second vacuum* along said perimeter seals" (emphasis added). It appears that at least two vacuum ports must be present in order to obtain "independent" levels of vacuum "across said interfacing surface" and "along said perimeter seals."

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 4-12, 23, 42 and 45-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 15; claim 23, line 5 and; claim 42, line 16, the limitation of "one or more vacuum output ports" is unclear whether said ports are capable of

obtaining "independent" levels of vacuum "across said interfacing surface" and "along said perimeter seals" at the same time or in subsequent steps. It is noted that for the purpose of examination it has been assumed that "independent" levels of vacuum are obtained in subsequent steps. Further clarification is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 31-39 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663).

Crane *et al.* (US 2003/0122285 A1) teach the basic claimed molding process and apparatus including, providing a flexible mold member having a plurality vacuum distribution channels molded therethrough, placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through to impregnate said fiber reinforced preform and form a fiber composite component (see claim 1). Further, Crane *et al.* (US 2003/0122285 A1) teach the basic claimed mold member (20) having a flexible structure that seals to an edge (14) of a base mold (12) to form a mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) that extends downward form the body of

the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal), wherein the seal has a vacuum channel (28) (distribution channel) defined by wall (30) and additional walls (32, 34) that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Crane *et al.* (US 2003/0122285 A1) also teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described. Furthermore, it is noted that vacuum is required in order for the seal structure to function as described (first vacuum) and also to generate resin flow (second vacuum), hence it is submitted that a first and a second vacuum is required in order for the invention of Crane *et al.* (US 2003/0122285 A1) to function as described.

Regarding claims 31, 34 and 39, although Crane *et al.* (US 2003/0122285 A1) teach a resin port, a vacuum port and multiple vacuum distribution channels, Crane *et al.* (US 2003/0122285 A1) do not teach flowing resin through multiple resin channels formed therein. Seemann ('663) teaches a boat building (boat hull molding) molding process and apparatus including, providing a reusable flexible mold member having a plurality of resin distribution channels molded therethrough (see col. 6, lines 7-11), placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber reinforced preform and form a fiber composite component. Therefore, it would have been obvious for one of ordinary skill in the art to have provided multiple resin distribution channels as taught by Seemann ('663) to the mold member in the process of Crane *et*

al. (US 2003/0122285 A1) because, Seemann ('663) teaches that such a multiple resin distribution channels provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

In regard to claims 32 and 55, although Crane *et al.* (US 2003/0122285 A1) teach that said mold member is made from a resilient, durable material, such as silicone rubber, Crane *et al.* (US 2003/0122285 A1) do not teach a reusable vacuum bag made from a polyurethane material (aromatic, aliphatic, polyaspartic). Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, reusable, mold member (see col. 8, lines 7-14). Therefore, it would have been obvious for one of ordinary skill in the art to have used a polyurethane rubber as taught by Seemann ('663) to build the mold member in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) because Seemann ('663) specifically teaches that silicone rubber and polyurethane rubber are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14), whereas Crane *et al.* (US 2003/0122285 A1) suggests using other materials besides silicone rubber as long as said materials are a resilient, durable material. It is submitted that polyurethane rubber is a resilient, durable material. Further, it is noted that that the mold member of Crane *et al.* (US 2003/0122285 A1) includes a portion (26) that corresponds to a portion (18) of a base mold (14) (see Figure 3). Furthermore, it is noted that it is known that a reusable vacuum bag corresponds to the shape and size of the resulting composite article.

Regarding claim 33, Crane *et al.* (US 2003/0122285 A1) teach multiple vacuum channels (see paragraph [0052], lines 11-12) extending downward for the body of the mold member (20),

the perimeter seal enclosing the entire mold member on each side, hence multiple seals being formed. It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described.

In regard to claim 35, Crane *et al.* (US 2003/0122285 A1) does not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663) teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member in the process of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such a standoff provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Specifically regarding claims 36-38, Crane *et al.* (US 2003/0122285 A1) do not teach a first region having an increased rigidity and/or an increased strength by applying a reinforcing material. Seemann ('663) teaches a molding process and apparatus, including providing regions of increased thickness (see col. 5, lines 25-32) and increased nylon reinforcing (see col. 5, lines 47-50). Further, Seemann ('663) teaches that the pattern of said multiple resin distribution channels is determined by the design characteristics of the resulting molded part (see col. 6, line 39-44). Therefore, it would have been obvious for one of ordinary skill in the art to have provided regions of increased thickness (increased rigidity) and/or increased strength as taught by Seemann ('663) in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) because,

Seemann ('663) teaches that an increased thickness and/or strength provides for an improved mold member by preventing collapse during vacuum.

11. Claims 13-22, 24, 26, 28-30, 40, 44 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663) and in further view of Johnson et al. (US Patent No. 6,723,273 B2).

Crane *et al.* (US 2003/0122285 A1) teach the basic claimed mold member (20) having a flexible structure that seals to an edge (14) of a base mold (12) to form a mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) that extends downward form the body of the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal), wherein the seal has a vacuum channel (28) (distribution channel) defined by wall (30) and additional walls (32, 34) that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Crane *et al.* (US 2003/0122285 A1) also teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described. Further, Crane *et al.* (US 2003/0122285 A1) teach a molding process including, providing a flexible mold member having a plurality vacuum distribution channels molded therethrough, placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through to impregnate said fiber reinforced preform and form a fiber composite component (see claim 1).

Regarding claims 13-15, 24, 30 and 40, although Crane *et al.* (US 2003/0122285 A1) teach a resin port, a vacuum port and multiple vacuum distribution channels, Crane *et al.* (US 2003/0122285 A1) do not teach flowing resin through multiple resin channels formed therein. Seemann ('663) teaches a boat building (boat hull molding) molding process and apparatus including, providing a reusable, polyurethane flexible mold member that corresponds to the shape of the resulting molded article and includes a plurality of resin distribution channels molded therethrough (see col. 6, lines 7-11), placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber reinforced preform and form a fiber composite component. Therefore, it would have been obvious for one of ordinary skill in the art to have provided multiple resin distribution channels as taught by Seemann ('663) to the mold member of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such a multiple resin distribution channels provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Further regarding claims 13-15, 24 and 40 and, in regard to claims 17, 45, 46 and 54, although Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) teach a reusable, polyurethane flexible mold member, Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) do not teach a polyurethane material that is sprayed. It is noted that Crane *et al.* (US 2003/0122285 A1) suggests using other materials besides silicone rubber as long as said materials are a resilient, durable material, whereas Seemann ('663) teaches that silicone rubber

and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14). However, spraying a polyurethane material is well known as evidenced by Johnson *et al.* ('273) who teach spraying a polyurethane solution to form an airtight enclosure (vacuum bag) (see col. 6, lines 36-39). Therefore, it would have been obvious for one of ordinary skill in the art to spray a polyurethane solution as taught by Johnson *et al.* ('273) to make the reusable vacuum bag in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) because of known advantages that spraying provides such as reduced cost, reduced waste, ease of operation and also because, Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member, hence suggesting the spraying process of Johnson *et al.* ('273). Further it is noted that Johnson *et al.* ('273) specifically teaches that a reusable vacuum bag corresponds to the shape and size of the resulting composite article (see col. 2, lines 46-48) and as such, because Seemann ('663) teaches a reusable, polyurethane flexible vacuum bag, it is submitted that the mold member in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Johnson *et al.* ('273) corresponds to the shape and size of the resulting composite article.

In regard to claim 18, because Crane *et al.* (US 2003/0122285 A1) teach a plurality of vacuum channels formed by a plurality of walls, it is submitted that said seal forms a grid of sidewall flanges (see Figure 3).

Specifically regarding claims 16, 26 and 44, Crane *et al.* (US 2003/0122285 A1) does not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663)

teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member and process of Crane *et al.* (US 2003/0122285 A1) in view of Johnson *et al.* ('273) because, Seemann ('663) teaches that such a standoff provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Regarding claims 19-22 and 28-29, Crane *et al.* (US 2003/0122285 A1) in view of Johnson *et al.* ('273) do not teach a first region having an increased rigidity and/or an increased strength by applying a reinforcing material. Seemann ('663) teaches a molding process and apparatus, including providing regions of increased thickness (see col. 5, lines 25-32) and increased nylon reinforcing (see col. 5, lines 47-50). Further, Seemann ('663) teaches that the pattern of said multiple resin distribution channels is determined by the design characteristics of the resulting molded part (see col. 6, line 39-44). Therefore, it would have been obvious for one of ordinary skill in the art to have provided regions of increased thickness (increased rigidity) and/or increased strength as taught by Seemann ('663) in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Johnson *et al.* ('273) because, Seemann ('663) teaches that an increased thickness and/or strength provides for an improved mold member by preventing collapse during vacuum.

12. Claims 1, 4 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663) and in further view of Hooper (US Patent No. 5,576,030).

Crane *et al.* (US 2003/0122285 A1) teach the basic claimed mold member (20) having a flexible structure that seals to an edge (14) of a base mold (12) to form a mold device (10), wherein said mold member (20) further includes an injection port (22), a vacuum port (24) and an integral seal (26) that extends downward form the body of the mold member (20) and mates with groove (18) in edge (14) of the base mold (12) (perimeter seal), wherein the seal has a vacuum channel (28) (distribution channel) defined by wall (30) and additional walls (32, 34) that have a generally wedge shape that can bend inward to create a good seal (see paragraphs [0049]-[0052]). Crane *et al.* (US 2003/0122285 A1) also teach multiple vacuum channels (see paragraph [0052], lines 11-12). It is submitted that said vacuum channels are in fluid communication with said vacuum port in order for the invention to function as described. Further, Crane *et al.* (US 2003/0122285 A1) teach a molding process including, providing a flexible mold member having a plurality vacuum distribution channels molded therethrough, placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through to impregnate said fiber reinforced preform and form a fiber composite component (see claim 1).

Regarding claims 1 and 12, although Crane *et al.* (US 2003/0122285 A1) teach a resin port, a vacuum port and multiple vacuum distribution channels, Crane *et al.* (US 2003/0122285 A1) do not teach flowing resin through multiple resin channels formed therein. Seemann ('663) teaches a boat building (boat hull molding) molding process and apparatus including, providing a reusable, polyurethane flexible mold member that corresponds to the shape of the resulting molded article and includes a plurality of resin distribution channels molded therethrough (see

col. 6, lines 7-11), placing said mold member onto a mold plate where a fiber reinforced preform is positioned, sealing said mold member against said mold plate, drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber reinforced preform and form a fiber composite component. Therefore, it would have been obvious for one of ordinary skill in the art to have provided multiple resin distribution channels as taught by Seemann ('663) to the mold member of Crane *et al.* (US 2003/0122285 A1) because, Seemann ('663) teaches that such a multiple resin distribution channels provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Further regarding claim 1, although Crane *et al.* (US 2003/0122285 A1) teach drawing a vacuum to seal said flexible member against said mold tool (base)(first vacuum) and also to evacuate gas/air from the space between said flexible member and said mold tool (base) (second vacuum), Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) do not teach a first and a second vacuum port to evacuate the sealed area and respectively, the molding area. Hooper ('030) teaches a molding system including first vacuum ports (16) for sealing and a second vacuum port (44) for forming a vacuum envelope (see col. 4, lines 43-50 and col. 5, lines 15-30). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a second vacuum port as taught by Hooper ('030) in the mold system of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) because of known advantages that a plurality of vacuum ports provides such as reduced processing time, increase vacuum levels that result in reduced porosity and improved characteristics of the resulting molded product.

In regard to claim 4, Crane *et al.* (US 2003/0122285 A1) in view of Hooper ('030) does not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663) teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member and process of Crane *et al.* (US 2003/0122285 A1) in view of in view of Hooper ('030) because, Seemann ('663) teaches that such a standoff provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Specifically regarding claim 7, Crane *et al.* (US 2003/0122285 A1) in view of Hooper ('030) do not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663) teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member and process of Crane *et al.* (US 2003/0122285 A1) in view of Hooper ('030) because, Seemann ('663) teaches that such a standoff provides for uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Regarding claims 8-11, Crane *et al.* (US 2003/0122285 A1) in view of in view of Hooper ('030) do not teach a first region having an increased rigidity and/or an increased strength by applying a reinforcing material. Seemann ('663) teaches a molding process and apparatus, including providing regions of increased thickness (see col. 5, lines 25-32) and increased nylon

reinforcing (see col. 5, lines 47-50). Further, Seemann ('663) teaches that the pattern of said multiple resin distribution channels is determined by the design characteristics of the resulting molded part (see col. 6, line 39-44). Therefore, it would have been obvious for one of ordinary skill in the art to have provided regions of increased thickness (increased rigidity) and/or increased strength as taught by Seemann ('663) in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Hooper ('030) because, Seemann ('663) teaches that an increased thickness and/or strength provides for an improved mold member by preventing collapse during vacuum.

13. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663) and in further view of Hooper (US Patent No. 5,576,030) and Johnson *et al.* (US Patent No. 6,723,273 B2).

Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Hooper ('030) teach the basic claimed mold as shown above.

Regarding claims 5 and 6, although Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Hooper ('030) teach a reusable, polyurethane flexible mold member, Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Hooper ('030) do not teach a polyurethane material that is sprayed. It is noted that Crane *et al.* (US 2003/0122285 A1) suggests using other materials besides silicone rubber as long as said materials are a resilient, durable material, whereas Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14). However, spraying a polyurethane

material is well known as evidenced by Johnson *et al.* ('273) who teach spraying a polyurethane solution to form an airtight enclosure (vacuum bag) (see col. 6, lines 36-39). Therefore, it would have been obvious for one of ordinary skill in the art to spray a polyurethane solution as taught by Johnson *et al.* ('273) to make the reusable vacuum bag in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Hooper ('030) because of known advantages that spraying provides such as reduced cost, reduced waste, ease of operation and also because, Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member, hence suggesting the spraying process of Johnson *et al.* ('273). Further it is noted that Johnson *et al.* ('273) specifically teaches that a reusable vacuum bag corresponds to the shape and size of the resulting composite article (see col. 2, lines 46-48) and as such, because Seemann ('663) teaches a reusable, polyurethane flexible vacuum bag, it is submitted that the mold member in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of and in further view of Hooper ('030) and Johnson *et al.* ('273) corresponds to the shape and size of the resulting composite article.

14. Claims 23, 42 and 44-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane *et al.* (US 2003/0122285 A1) in view of Seemann (US Patent No. 5,702,663) and in further view of Johnson *et al.* (US Patent No. 6,723,273 B2) and Hooper (US Patent No. 5,576,030).

Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Johnson *et al.* ('273) teach the basic claimed mold as shown above.

Regarding claims 23, 42 and 52-53, although Crane *et al.* (US 2003/0122285 A1) teach drawing a vacuum to seal said flexible member against said mold tool (base)(first vacuum) and also to evacuate gas/air from the space between said flexible member and said mold tool (base) (second vacuum), Crane *et al.* (US 2003/0122285 A1) do not teach a first and a second vacuum port to evacuate the sealed area and respectively, the molding area. Hooper ('030) teaches a molding system including first vacuum ports (16) for sealing and a second vacuum port (44) for forming a vacuum envelope (see col. 4, lines 43-50 and col. 5, lines 15-30). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a second vacuum port as taught by Hooper ('030) in the mold system of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Johnson *et al.* ('273) because of known advantages that a plurality of vacuum ports provides such as reduced processing time, increase vacuum levels that result in reduced porosity and improved characteristics of the resulting molded product.

Further regarding claim 42 and in regard to claims 45-46, Seemann ('663) teaches a reusable, polyurethane flexible mold member. Further, it is noted that Johnson *et al.* ('273) teach spraying a polyurethane solution to form an airtight enclosure (vacuum bag) (see col. 6, lines 36-39). Furthermore, Crane *et al.* (US 2003/0122285 A1) suggests using other materials besides silicone rubber as long as said materials are a resilient, durable material, whereas Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member (see col. 8, lines 7-14). Therefore, it would have been obvious for one of ordinary skill in the art to spray a polyurethane solution as taught by Johnson *et al.* ('273) to make the reusable vacuum bag in the process and apparatus of

Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Hooper ('030) because of known advantages that spraying provides such as reduced cost, reduced waste, ease of operation and also because, Seemann ('663) teaches that silicone rubber and polyurethane rubber (aromatic, aliphatic, polyaspartic) are alternative materials in constructing a flexible, mold member, hence suggesting the spraying process of Johnson *et al.* ('273). Further it is noted that Johnson *et al.* ('273) specifically teaches that a reusable vacuum bag corresponds to the shape and size of the resulting composite article (see col. 2, lines 46-48) and as such, because Seemann ('663) teaches a reusable, polyurethane flexible vacuum bag, it is submitted that the mold member in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Seemann ('663) and in further view of Johnson *et al.* ('273) and Hooper ('030) corresponds to the shape and size of the resulting composite article.

In regard to claim 47, because Crane *et al.* (US 2003/0122285 A1) teach a plurality of vacuum channels formed by a plurality of walls, it is submitted that said seal forms a grid of sidewall flanges (see Figure 3).

Specifically regarding claim 44, Crane *et al.* (US 2003/0122285 A1) does not teach a standoff having a plurality of passages to facilitate fluid communication. Seemann ('663) teaches a standoff (60) having a plurality of passages (14) that facilitate resin flow (see Figure 8). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a standoff having a plurality of passages as taught by Seemann ('663) to the mold member and process of Crane *et al.* (US 2003/0122285 A1) in view of Johnson *et al.* ('273) and in further view of Hooper ('030) because, Seemann ('663) teaches that such a standoff provides for

uniform resin flow and, a simpler molding process and reusability by avoiding the use of a separate resin distribution means.

Regarding claims 48-51, Seemann ('663) teaches a molding process and apparatus, including providing regions of increased thickness (see col. 5, lines 25-32) and increased nylon reinforcing (see col. 5, lines 47-50). Further, Seemann ('663) teaches that the pattern of said multiple resin distribution channels is determined by the design characteristics of the resulting molded part (see col. 6, line 39-44). Therefore, it would have been obvious for one of ordinary skill in the art to have provided regions of increased thickness (increased rigidity) and/or increased strength as taught by Seemann ('663) in the process and apparatus of Crane *et al.* (US 2003/0122285 A1) in view of Johnson *et al.* ('273) and in further view of Hooper ('030) because, Seemann ('663) teaches that an increased thickness and/or strength provides for an improved mold member by preventing collapse during vacuum.

Response to Arguments

15. Applicant's arguments filed March 29, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Stefan Staicovici, PhD

Stefan Staicovici 4/15/06

Primary Examiner

AU 1732

April 15, 2006